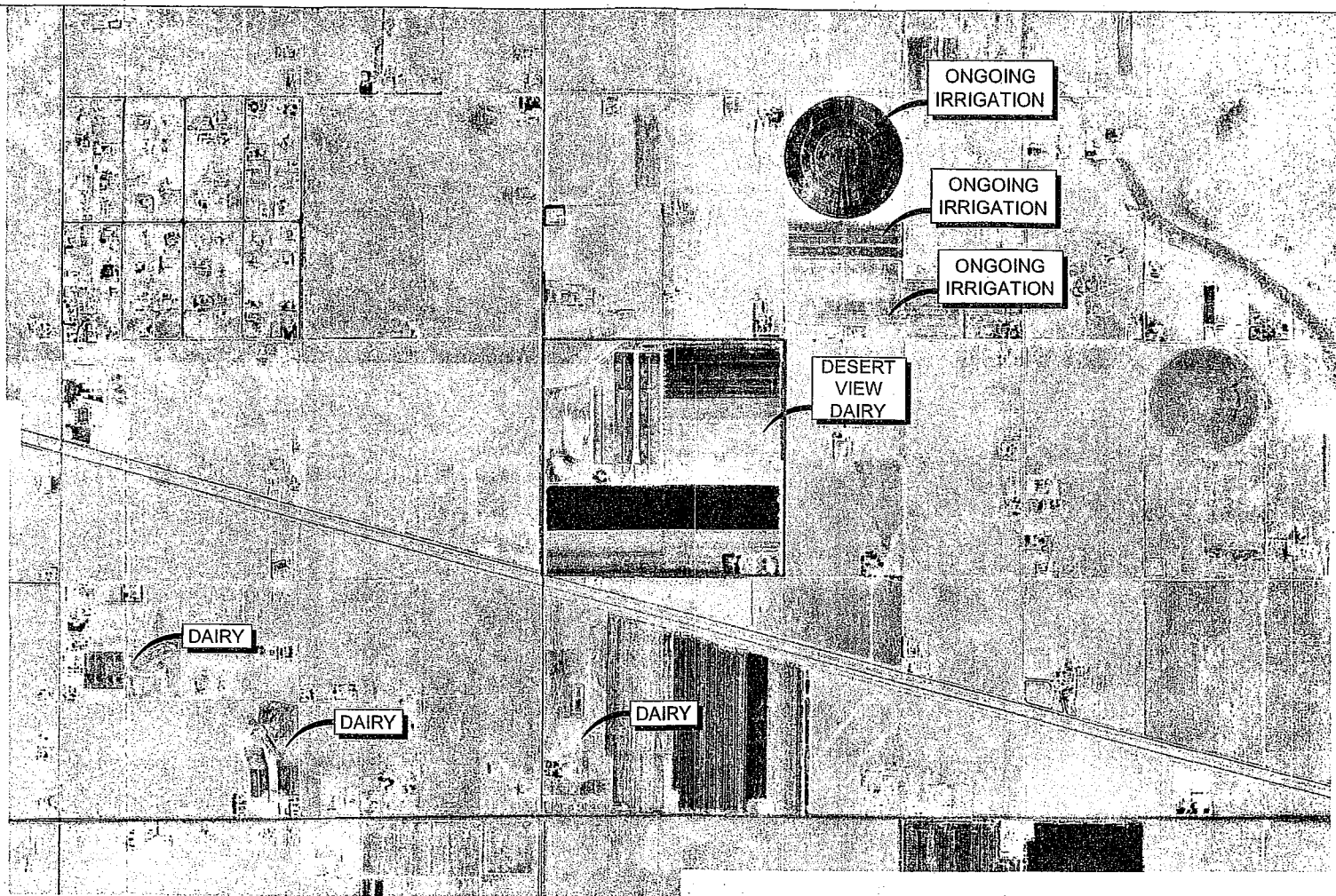


NOTE: DARK AREAS ARE IRRIGATED LAND.

1984 AERIAL PHOTO
DESERT VIEW DAIRY
37501 MOUNTAINVIEW ROAD
Hinkley, California

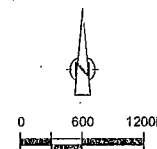
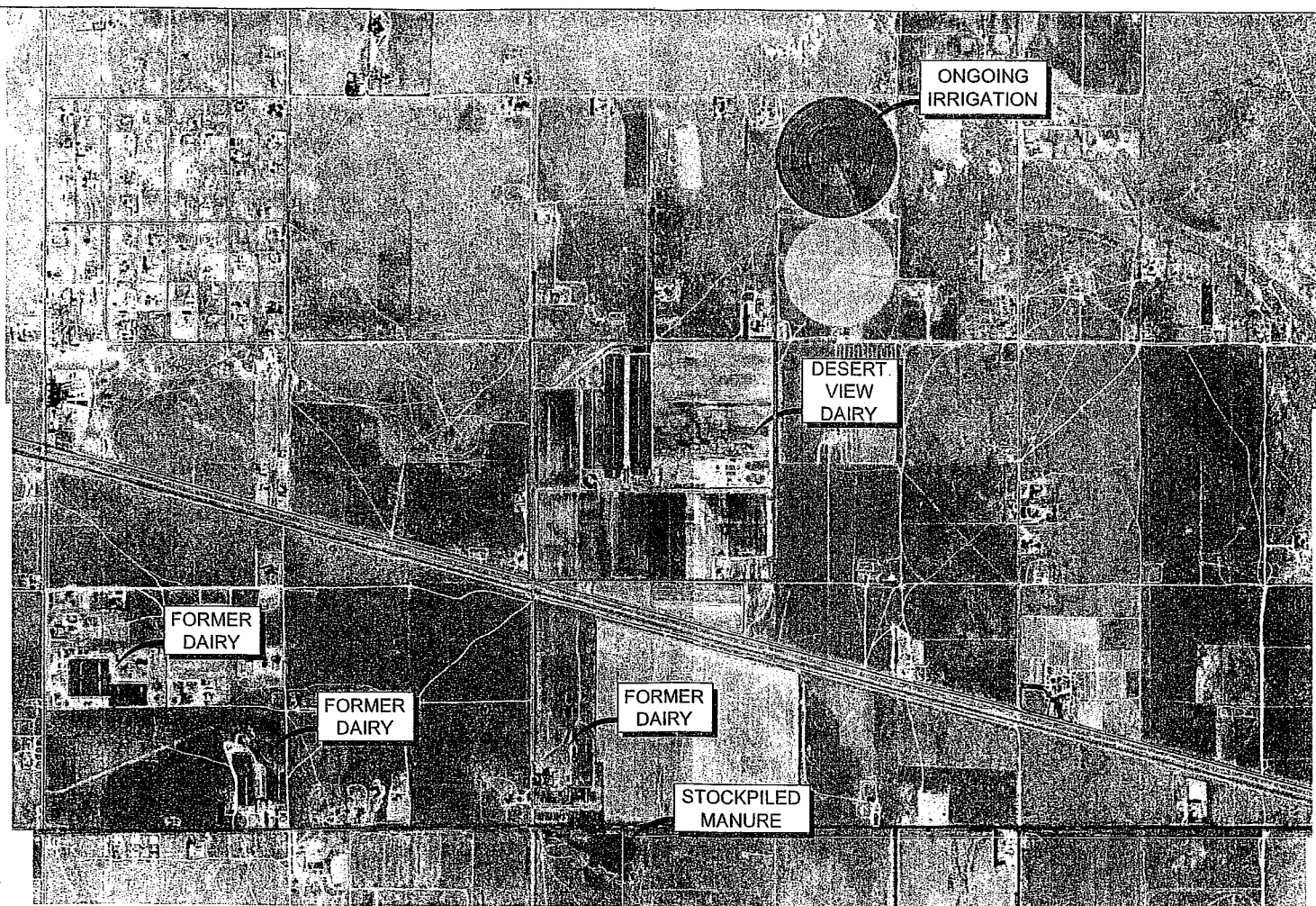




NOTE: DARK AREAS ARE IRRIGATED LAND.

1994 AERIAL PHOTO
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37501 MOUNTAINVIEW ROAD
Hinkley, California





2005 AERIAL PHOTO
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GROUNDWATER INVESTIGATION DATA REPORT (OCTOBER 2008)

**DESERT VIEW DAIRY
HINKLEY, CALIFORNIA**

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**OCTOBER 2008
REF. NO. 054041 (3)**

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**GROUNDWATER INVESTIGATION
DATA REPORT (OCTOBER 2008)**

**DESERT VIEW DAIRY
HINKLEY, CALIFORNIA**

OCTOBER 2008

REF. NO. 054041 (3)

This report is printed on recycled paper.

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1.0 INTRODUCTION

This report presents the results of the October 2008 Groundwater Investigation conducted at the Desert View Dairy (DVD) Facility in Hinkley, California. This report has been prepared by Conestoga-Rovers and Associates (CRA), on behalf of the DVD. The October 2008 Groundwater Investigation was conducted to address the State of California Regional Water Quality Control Board- Lahontan Region (Water Board) concerns on groundwater impacts outlined in their letter dated May 9, 2008. The October 2008 Groundwater Investigation was conducted in accordance with CRA's "Groundwater Investigation Work Plan" dated July 2008, which was approved by the Water Board on August 13, 2008.

The purpose of this report is to summarize the results of the October groundwater monitoring event, to summarize the current groundwater conditions, and to evaluate the need for future work at this facility. The interpretations made in this report are based on the field data and limited historical information. Additional help may be needed from the Water Board to obtain missing records in order to further clarify the site conceptual model.

2.0 BACKGROUND

2.1 CURRENT OPERATIONS

The DVD Facility (Site) is located at 37501 Mountain View Road in Hinkley, California (San Bernardino County). Figure 2.1 presents the Site location. The DVD and associated acreage is located in the northern half of the northwest 1/4 of section 26 and encompasses approximately 180 acres, which is shown on Figure 2.2.

The property is currently owned by Pacific Gas and Electric (PG&E) and the DVD is rented and operated by Mr. Paul Ryken. Mr. Ryken has been operating the DVD from 1991 to present. The Site was idle from 1986 to 1991 and was used for dairy operations by the Flameling Brothers prior to 1986.

Within the Site are two homes, the dairy operation (open lots and parlor buildings), a solids separator system, and a storm water storage pond. The DVD currently houses 1,250 dairy cows, 200 dry cows, and 40 springers. All manure and wastewater generated by the facility is managed by the DVD. The solid manure is exported off-Site and the liquids are applied through irrigation to cropland rented by DVD.

2.2 ENVIRONMENTAL BACKGROUND

Previous investigations and sampling at the Site have been associated with the chromium groundwater impacts related to the PG&E Hinkley Compressor Station Site. There is an extensive network of wells around the Hinkley Compressor Station study area with approximately 40 wells near the DVD, 22 of which are on the DVD Site. Figure 2.3 presents the existing well locations across the Hinkley Compressor Station study area. There are also four active groundwater extraction wells (EX-1 through EX-4) in the southern section of the DVD Site, which are used by PG&E to remove chromium-impacted groundwater. There were an additional 3 extraction wells (EX-15, EX-16 and EX-20) that were installed and put into operation this year. These seven extraction wells collectively pumped an average of 482,400 gallons per day based on the PG&E 2007 Annual Monitoring Report (CH2MHill, 2008¹).

According to PG&E's historical database, the on-going monitoring of the area wells have identified elevated concentrations of nitrate-NO₃ that have been greater than the California Drinking Water Standard of 45 mg/L (nitrate-NO₃). The historical database

¹ CH2MHill, 2008. 2007 Annual Monitoring Report, Hinkley Compressor Station, Hinkley, California.

has nitrate concentrations reported both as nitrate-N and nitrate-NO₃. Nitrate-N concentrations across the area, which include other surrounding properties, range from non-detect to 102 mg/L. It appears from a limited data of the historical database review, the general background concentration of nitrate-N ranges from 1 to 15 mg/L (4.4 to 66 mg/L nitrate-NO₃). The historical database reports nitrate-N. The data in this report are presented nitrate-NO₃. Historical data previously reported as nitrate-N concentration will need to be mathematically converted to nitrate-NO₃ by multiplying by 4.428 (this accounts for the difference in molecular weight of the two compounds).

2.3 HYDROGEOLOGIC CONDITIONS

The Site is located in the Hinkley Valley, which is within the northern half of the Mojave River groundwater basin. The Mojave River groundwater basin is considered topographically enclosed (USGS, 2001²). The groundwater basin contains unconsolidated alluvial and floodplain sediments of sands, gravels, silts, and clays. Within the basin, there are a series of north-south trending fault block mountains.

The basin is composed of two major aquifers -- the Floodplain Aquifer and the Regional Aquifer. The Floodplain Aquifer is composed of Mojave River deposits. While the underlying Regional Aquifer is composed of alluvial deposits from the surrounding mountains.

The groundwater in the Hinkley Valley is generally divided into two depth-specific aquifers: the Upper Aquifer and the Lower Aquifer. The Upper Aquifer contains portions of the Floodplain and Regional Aquifer and is underlain by the Blue Clay aquitard. The Lower Aquifer is present beneath the Blue Clay aquitard. The Lower Aquifer is underlain by granitic bedrock (CH2MHill, 2008)¹.

Groundwater is typically encountered in 75 to 102 feet below ground surface (bgs). Regionally, groundwater flow is in a northeasterly direction based on the PG&E 2007 Annual Monitoring Report (CH2MHill, 2008)¹.

Based on the review of the past monitoring reports, groundwater generally flows north. There is a significant amount of pumping that occurs from the extraction wells and irrigation wells in the vicinity of the DVD. The groundwater elevation/contour maps

² U.S. Geological Survey, 2001, Simulation of Groundwater Flow in the Mojave River Basin, California.

presented by CH2MHill in the various reports show a northwesterly to northeasterly flow which presumably changes based on pumping conditions.

2.4 POTENTIAL SOURCE AREAS

Several potential source areas may be contributing to the nitrate groundwater impacts being detected down-gradient of the Site. These potential source areas include:

1. Manure/wastewater storage pond(s);
2. Wastewater application on cropland;
3. On-Site and off-Site septic systems; and
4. Up-gradient and down-gradient agricultural operations.

The manure and wastewater are handled by the DVD with the solid manure currently being exported off-Site and the liquids (washwater, wastewater, and Storm water) are currently transferred to the solids separator. The liquids are then land applied through centerpivot irrigation to the fields in the northeast corner of the property. The storm water pond in the northern corner of the property was constructed in 1981 and no drawings or details are available as to how it was built. Mr. Ryken indicated that it was likely constructed of compacted clay. Prior to this storm water pond being built, all wastewater and storm water runoff was directed to the field immediately west of the operation. Mr. Ryken indicated that this field generally had standing liquids present most of the time. As requested by the Water Board in their letter dated May 9, 2008, additional information and manure application/export records were reviewed, and a technical report was submitted on July 30, 2008, which described waste storage and disposal actions that have occurred at the DVD.

On-Site and off-Site septic systems may also be potential sources of nitrates in groundwater. Most of the residential dwellings have individual septic systems and depending on how they were constructed and their age, could be contributing to the nitrates in the groundwater. Mr. Ryken indicated that some of the former dwellings adjacent to the dairy did not have septic systems at all.

For decades, the entire area surrounding the DVD has been used primarily for agriculture. Neighboring properties would likely have had similar practices for manure handling and may also be contributing sources of nitrates to the groundwater. Mr. Ryken indicated that two hog operation existed near the farm, one immediately

west of the DVD and one to the north along Thompson Road. These facilities had liquid manure storage ponds and likely land application and stockpiling of solid manure throughout their operational history. Mr. Ryken also indicated that the Nelson Dairy was located immediately south of the DVD and that this dairy operated for several decades. Based on the limited groundwater analytical data on the constituents of concern, there have been nitrate concentrations detected up-gradient and cross-gradient to the Site. This suggests that the neighboring off-Site agricultural operations may be responsible for the impacted groundwater monitored by these wells. These other potential source areas are shown on Figure 2.4.

Additional sources may exist with the present and former wells located in the general vicinity of the Site. Old wells with improper surface seals may have allowed land applied nutrients to migrate into the groundwater. Present day agronomic standards have setback distances to potential "conduits" such as wells, sinkholes, and shallow bedrock. However, if these standards were not followed, nutrients could prematurely migrate into groundwater via an open well head or improper surface seal.

3.0 SCOPE OF WORK

The objectives of the October 2008 Groundwater Investigation were to:

- assess the nature and extent of groundwater contamination at and around the DVD; and
- evaluate the potential impacts to groundwater quality and nearby receptors.

The scope of the October 2008 Groundwater Investigation included:

- focused groundwater sampling to clarify the groundwater conditions, specifically for the general water quality analytes of concern;
- evaluation of the existing extraction well EX-13 as a source control well; and
- identification of possible source areas.

The October 2008 Groundwater Investigation was conducted in accordance with CRA's "Groundwater Investigation Work Plan" dated July 2008, which was approved by the Water Board on August 13, 2008.

Modifications to the original Work Plan were required as a result of issues identified in the field. These changes were relayed to the Water Board for approval prior to implementation. The following changes/modifications were implemented:

- Monitoring wells MW-21, MW-30, MW-32, MW-42, and MW-62 were not sampled because upon field inspection and communication with the PG&E Consultant, CH2MHill, these wells were determined not to exist. The following monitoring wells were subsequently added to the sampling program as replacement locations: MW-21A, MW-21B, MW-21B1, MW-30B1, and MW-30B2.
- Monitoring well MW-43 was not sampled because CH2MHill had a transducer and hydrosleeve placed in the well and preferred the well not be disturbed.
- Residential well locations 22-29 and 23-07 were not sampled because no one was home to provide access/permission to sample. Residential well locations 23-01, 23-04, 23-17, 23-18, and 27-22 were not sampled because the wells were not operational. The following residential wells were subsequently added to the sampling program as replacement locations: 38038 Mountain View Road, 38075 Summerset Road, 22619 Thomson Road (1), 22726 Thompson Road, 22839 Thompson Road, 22875 Thompson Road, 23171 Thompson Road.

- Upon field inspection, dedicated bladder pumps were found in-place at monitoring well locations DW-01, DW-02, MW-03, MW-21B, MW-21C, MW-30B2, and MW-32B1. Therefore, these monitoring well locations were purged using low-flow purging methods, rather than purging three well volumes. MW-31 was also purged using low-flow purging methods because the well casing at this location was bent (it had recently been hit by a vehicle) and the only way to sample the well was to utilize a "low-flow" size pump.

4.0 FOCUSED GROUNDWATER SAMPLING

The October 2008 Focused Groundwater Sampling Event was conducted during the week of October 6, 2008. Figure 4.1 presents the network of monitoring and residential wells selected for sampling under the Focused Groundwater Sampling Program. The locations selected for groundwater monitoring included 28 monitoring wells and 9 residential wells.

Where available, CRA compiled well construction information associated with each of the locations selected for groundwater monitoring. A well construction summary table is provided in Appendix A. There is a wide variation in the construction of the wells and the screening of the wells are not consistent. Many of them appear to be submerged by tens of feet below the groundwater table. CRA will be referring to those wells that are screened within the upper 40 feet of the aquifer as shallow-screened wells and those that are screened greater than 40 feet below the groundwater table as deep-screened wells. See Appendix A for clarification of the well naming based on the screen interval.

4.1 HYDRAULIC MONITORING PROGRAM

CRA measured depth to groundwater in all monitoring wells prior to the start of sample collection. Depth to water measurements were obtained using an electric water level tape and were used to calculate groundwater elevations (Table 4.1). Groundwater elevations in the shallow-screened wells ranged from 2,081.43 ft. AMSL (MW-55A) to 2,090.68 ft. AMSL (MW-29), excluding pumping wells. Groundwater elevations in the deep-screened wells ranged from 2,057.13 ft. AMSL (MW-21C) to 2,063.70 ft AMSL (MW-34).

Groundwater contours were prepared using the groundwater elevations measured in the shallow-screened wells and are presented on Figure 4.2. During groundwater elevation measurements, four extraction wells were actively pumping (EX-01 through EX-04), which influenced the groundwater flow patterns shown on Figure 4.2. Groundwater flowed in a northeasterly flow pattern due to the combined groundwater pumping of EX-01, EX-02, and EX-03, which combined appear to represent a single groundwater pumping source. EX-04 is located in the southwest corner of the property and creates a groundwater flow divide in that area. The combined groundwater pumping of EX-01 through EX-03 captures a substantial portion of groundwater that flows under the southern half of the DVD Site.

Under non-pumping conditions, groundwater flow is reportedly to be towards the north-northwest (CH2MHill, 2004)³. However, the shift in groundwater flow towards the northeast due to groundwater pumping is consistent with previous reports (CH2MHill, 2005)⁴.

4.2 GROUNDWATER SAMPLING PROGRAM

Groundwater sampling was conducted in accordance with CRA's "Groundwater Investigation Work Plan", approved by the Water Board on August 13, 2008. Table 4.2 presents the sampling summary associated with the October 2008 monitoring well sampling. Table 4.3 presents the sampling summary associated with the October 2008 residential well sampling.

Samples were collected from monitoring wells and residential wells for laboratory analysis of nitrate-NO₃, chloride, sodium, sulfate, and total dissolved solids (TDS). Field parameters (pH, temperature, conductivity) were also measured and recorded at each sampling location.

Sampling was conducted after purging each well. Samples were placed in iced coolers and shipped within 48 hours via commercial courier to Test America Laboratories in Irvine, California, under standard chain of custody procedures.

Appendix B contains electronic copies of the laboratory reports associated with the October 2008 Focused Groundwater Sampling Event. A data quality assessment memo is provided in Appendix C.

Table 4.4 provides a summary of detected compounds in monitoring wells sampled during the October 2008 Focused Groundwater Sampling Event. Table 4.5 provides a summary of detected compounds in residential wells sampled during the October 2008 Focused Groundwater Sampling Event. A summary of the October 2008 groundwater quality data is shown on Figure 4.3.

³ CH2MHill, 2004. 2003 Annual Monitoring Report, Hinkley Compressor Station, Hinkley, California.

⁴ CH2MHill, 2005. 2004 Annual Monitoring Report, Hinkley Compressor Station, Hinkley, California.

4.3 GROUNDWATER QUALITY

4.3.1 MONITORING WELLS

4.3.1.1 NITRATE-NO3 RESULTS

October 2008 nitrate-NO₃ concentrations associated with each monitoring well location are shown on Figure 4.4. Nitrate-NO₃ iso-concentration contours are also shown on Figure 4.4. The contours were constructed using the concentrations in the shallow-screened wells and the residential wells to obtain the most accurate extent of the affected groundwater and to eliminate variations due to the deep-screened intervals. Groundwater samples from monitoring wells DW-01 and EX-04 which are located up-gradient of the DVD contain elevated concentrations of nitrate-NO₃ above the primary drinking water standard (45 mg/L). This data is consistent with the historical nitrate-N/NO₃ concentrations.

At the DVD Site, October 2008 nitrate-NO₃ concentrations in the groundwater samples from the shallow-screened monitoring wells ranged from 41 mg/L (MW-30A) to 420 (DW-02), with the highest concentrations typically observed in the wells screened in the upper portion of the aquifer. October 2008 nitrate-NO₃ concentrations in the deepest screened wells were non-detect (MW-21C and MW-34).

October 2008 nitrate-NO₃ concentrations were higher in groundwater samples collected from the northern property line, which is consistent with historical nitrate-NO₃ concentrations. The area in the northwest corner of DVD (represented by the groundwater sample collected from monitoring well DW-02) appears to have the highest measured nitrate-NO₃ concentration at 420 mg/L. This is a low lying area that received stormwater and lot runoff from past operations. This area is currently being used for approved discharge of extracted groundwater from the existing PG&E extraction wells.

4.3.1.2 CHLORIDE RESULTS

October 2008 chloride concentrations detected in groundwater samples collected from each monitoring well location are shown on Figure 4.5 and chloride iso-concentration contours were constructed using the shallow-screened and residential wells. Similar to the reported nitrate concentrations, elevated chloride concentrations (> 250 mg/L) are observed across the region. At the DVD Site, October 2008 chloride concentrations in

groundwater samples collected from the shallow-screened monitoring wells ranged from 240 mg/L (MW-30A) to 1,100 mg/L (MW-63), with the highest concentrations typically observed in the wells screened within the upper portion of the aquifer. October 2008 chloride concentrations in samples collected from the deepest screened wells were 23 mg/L (MW-34) and 330 mg/L (MW-21C).

4.3.1.3 TOTAL DISSOLVED SOLIDS (TDS) RESULTS

October 2008 TDS concentrations from each monitoring well location are shown on Figure 4.6 and TDS iso-concentration contours were constructed using the shallow-screened and residential wells. TDS is a measurement of the dissolved ion concentration in water. Similar to the reported nitrate and chloride concentrations, elevated TDS concentrations (> 500 mg/L) were observed in groundwater samples collected from both upgradient and downgradient of the DVD. At the DVD Site, October 2008 TDS concentrations in the shallow-screened monitoring wells ranged from 1,200 mg/L (MW-30A) to 4,700 mg/L (MW-63 and MW-21A), with the higher concentrations observed in groundwater samples collected from the wells screened in the upper portion of the aquifer. October 2008 TDS concentrations in the deepest screened wells were 770 mg/L (MW-34) and 1,200 mg/L (MW-21C),

4.3.1.4 SULFATE RESULTS

Similar to reported concentrations of other compounds, elevated sulfate concentrations (> 250 mg/L) were observed in groundwater samples collected across the sampling area both up-gradient and down-gradient of the DVD. At the DVD Site, October 2008 sulfate concentrations in the shallow-screened monitoring wells ranged from 330 mg/L (MW-30A) to 1,800 mg/L (MW-21A), with the higher concentrations observed in groundwater samples collected from the upper portion of the aquifer. October 2008 sulfate concentrations in groundwater samples collected the deepest screened wells were 180 mg/L (MW-34) and 290 mg/L (MW-21C).

4.3.1.5 SODIUM SAMPLING RESULTS

Similar to reported concentrations of other compounds, elevated sodium concentrations (> 20 mg/L) were groundwater samples collected observed across the sampling area both up-gradient and down-gradient of the DVD. At the DVD Site, October 2008

sodium concentrations groundwater samples collected from the shallow-screened monitoring wells ranged from 160 mg/L (MW-30A) to 670 mg/L (MW-21A), with the higher concentrations observed in the upper portion of the aquifer. October 2008 sodium concentrations in the groundwater samples collected from the lower aquifer ranged from 200 mg/L (MW-21C) to 260 mg/L (MW-34).

4.3.2 RESIDENTIAL WELLS

4.3.2.1 NITRATE-NO3 RESULTS

October 2008 nitrate-NO3 concentrations associated with each residential well location are shown on Figure 4.4. Two residential wells located northeast of the DVD (near the intersection of Thompson Road and Summerset Road) had nitrate-NO3 detected in the groundwater sample below the primary drinking water standard (45 mg/L) with concentrations at 25 mg/L (23171 Thompson Road) and 9.7 mg/L (38075 Summerset Road). One well north of the DVD (near the intersection of Thompson Road and Mountain View Road) also had nitrate-NO3 detected samples below the drinking water standard with a concentration at 21 mg/L (38080 Mountain View Road).

Six residential wells located north of the DVD (south of Thompson Rd, between Mountain View Road and Summerset Road) had nitrate-NO3 detected sample above the primary drinking water standard (45 mg/L) with concentrations ranging from 85 mg/L (22726 Thompson Road) to 240 mg/L (22839 Thompson Road). Two of these six wells (22726 & 22839 Thompson Road) had been sampled previously and past nitrate-NO3 concentrations were relatively consistent with the nitrate-NO3 concentrations measured in October 2008.

4.3.2.2 CHLORIDE RESULTS

October 2008 chloride concentrations associated with each residential well location are shown on Figure 4.5. As with the reported nitrate concentrations, concentrations of chloride above its secondary drinking water standard (250 mg/L) are observed in several residential wells to the north of the DVD. The secondary (i.e., non-health based) drinking water standard for chloride is based on general aesthetics, such as taste, odor, and appearance. October 2008 chloride concentrations in the groundwater samples in residential wells ranged from 52 mg/L (38075 Summerset Road) to 1200 mg/L (22619, 22839 & 22875 Thompson Road).

4.3.2.3 TOTAL DISSOLVED SOLIDS (TDS) SAMPLING RESULTS

October 2008 TDS concentrations associated with each residential well location are shown on Figure 4.6. Similar to the reported nitrate and chloride concentrations, concentrations of TDS in the groundwater samples were above its secondary drinking water standard (500 mg/L) are observed in several residential wells to the north of the DVD. The secondary (i.e., non-health based) drinking water standard for TDS is based on general aesthetics, such as taste, odor, and appearance. October 2008 TDS concentrations in residential wells ranged from 410 mg/L (38075 Summerset Road) to 5,100 mg/L (22875 Thompson Road) in the groundwater samples collected.

4.3.2.4 SULFATE RESULTS

Similar to reported concentrations of other compounds, concentrations of sulfate above its secondary drinking water standard (250 mg/L) are observed in several residential wells to the north of the DVD. The secondary (i.e., non-health based) drinking water standard for sulfate is based on general aesthetics, such as taste, odor, and appearance. October 2008 sulfate concentrations in residential wells ranged from 72 mg/L (38075 Summerset Road) to 1,600 mg/L (22839 Thompson Road) in the groundwater samples collected.

4.3.2.5 SODIUM SAMPLING RESULTS

Similar to reported concentrations of other compounds, concentrations of sodium above its secondary drinking water standard (20 mg/L) are observed in several residential wells to the north of the DVD. The secondary drinking water standard for sodium is for individuals on a restricted sodium diet. October 2008 sodium concentrations in residential wells ranged from 71 mg/L (38075 Summerset Road) to 550 mg/L (22619 Thompson Road) in the groundwater samples collected.

5.0 EVALUATION OF EXTRACTION WELL EX-13

CRA reviewed historical pumping test data from a pumping test completed on extraction well EX-13 (inactive) was reviewed to determine the hydraulic characteristics of the groundwater aquifer in the immediate vicinity of the Site and evaluate the use of EX-13 as a potential remedial option in the event that groundwater containment is necessary.

Based on review of available pumping test data provided by CH2MHill, it is estimated that EX-13 could have a capture width of up to 260 feet at a pumping rate of 49 gpm. At that pumping rate, EX-13 would likely capture groundwater from the DW-02 area. However, additional hydraulic testing would be necessary to confirm the aquifer hydraulic parameters and the relative nature and extent of hydraulic containment.

A more detailed summary of the EX-13 evaluation and the data reviewed as part of the evaluation are provided in Appendix D.

6.0 IDENTIFICATION OF POTENTIAL SOURCE AREAS

As stipulated in CRA's "Groundwater Investigation Work Plan" dated July 2008, a records search of all known present and former on-Site and local off-Site source areas was recommended. CRA made three visits to the local Natural Resource Conservation Service (NRCS) office to review past historical records; however, the records could not be located by NRCS staff. Therefore, at the present time, no record search information is available.

7.0 CONCLUSIONS AND RECOMMENDATIONS

7.1 CONCLUSIONS

Based on data collected during this groundwater investigation and comparison of current data with historical monitoring results, CRA concludes the following:

- Past agricultural operations around the area may have contributed to elevated concentration of nitrates in the groundwater;
- Concentrations of nitrate are greater than applicable drinking water standards both up-gradient, cross-gradient and down-gradient of the DVD;
- Groundwater flow is generally to the north (with a northeast component that is effected by pumping). The groundwater flow direction may also be effected by the bedrock outcrop in the northwest corner of the Site; and
- Available analytical data are not sufficient to define the northern edge of the nitrate plume.

7.2 RECOMMENDATIONS

Based on the data currently available, CRA recommends the following:

- Complete a detailed well log/file review of all residential wells north of the Site;
- Complete a detailed review of monitoring well logs to develop a geologic cross section of the area that will include both soil stratigraphy and chemical concentrations;
- Complete interviews as necessary, to supplement the well log/file review;
- Complete a comprehensive round of residential well sampling within the area bordered by Alcudia Road to the south, Mountain General Road to the north, Mountain View Road to the west and Summerset Road to the east (this would include sampling the nine residential well locations sampled in October 2008). Water samples should be collected from these wells and analyzed for the analytes of concern: nitrate-NO₃, chloride, TDS, sodium and sulfate. A preliminary survey of potential downgradient residential wells is shown on Figure 7.1. The residential locations identified on Figure 7.1 are based on review of aerial photography and are preliminary. Actual residential well locations within the area defined on Figure 7.1 would be confirmed in the field.

- Follow-up with the local Natural Reserve Conservation Service (NRCS) office to determine if historical farmstead maps have been located. This information is necessary to identify potential sources of nitrate being measured in the groundwater in the area.

8.0 PROFESSIONAL GEOLOGIST CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Lynleigh Lowry
Lynleigh Lowry

Conestoga-Rovers & Associates, Inc.



P.G. Seal

California Registration No. : 7870

License Expiration Date: 9/10

Signature: *Lynleigh Lowry*

Date: 10/31/08